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DECISION DOCUMENT
Eric's Main Street Mobil/BP Service Station
Flemington, New Jersey

1.0 INTRODUCTION

This Decision Document (DD) identifies the remedial alternatives to be implemented to address soil and groundwater contamination at Eric's Main Street Mobil/BP Service Station (Site) located at 144 Main Street [Tax Block 38, Lot 1.01] at the intersection of Main and William Streets in Flemington, Hunterdon County, New Jersey.

The New Jersey Department of Environmental Protection (NJDEP) is issuing this DD as part of its responsibilities pursuant to the following statutes: the *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E); the *Spill Compensation and Control Act* (N.J.S.A. 58:10-23 a, et. seq.); the *Solid Waste Management Act* (N.J.S.A 13:1E-1 et. seq.); the *Water Pollution Control Act* (N.J.S.A. 58:10A-1 et seq.); the *Brownfield and Contaminated Site Remediation Act* N.J.S.A. 58:10B; P.L. 1997 c. 278; and the regulations promulgated under each of these acts.

This document outlines the remedial alternatives that were evaluated and provides the rationale used by the NJDEP to select the remedial actions for the Site relative to soil and groundwater contamination. Findings of the Site remedial investigation (RI) activities and the remedial action selection evaluation (RASE) completed to address Site soil and groundwater contamination formed the basis on which the remedial action selection decision was made. A brief summary of the pertinent information derived from the RI and RASE reports is provided in subsequent sections of this document. A complete description of the tasks implemented and the results obtained from the RI and RASE are presented in detail in the following reports:

- Remedial Investigation (RI) Report, dated August 2005 (Berger, 2005)
- Remedial Action Selection Evaluation (RASE) Report, dated February 2006 (Berger, 2006)

Copies of these reports are available for review at the following document repositories:

New Jersey Department of Environmental Protection
401 East State Street
Trenton, NJ 08625

Flemington Borough Hall (NJDEP TO CONFIRM)

2.0 COMMUNITY ROLE IN THE SELECTION PROCESS

A public meeting to present the RI and RASE findings and NJDEP's preferred alternative will be held on XXX at XXX in XXXXXX. NJDEP will also establish a public comment period of thirty (30) days from XXX to XXX to gather public comments prior to selecting the final remedy. All NJDEP responses to public comments received will be summarized in a pending Responsiveness Summary. (NJDEP TO PROVIDE DATES)

3.0 SITE BACKGROUND

The Site is a 0.25-acre property located at 144 Main Street [Tax Block 38, Lot 1.01] at the intersection of Main and William Streets in Flemington, Hunterdon County, New Jersey (Figure 1). The Site was formerly used as a gasoline filling station from the 1950s and is currently occupied by an automotive service facility. The pumps, tanks and appurtenances from the former filling station are still on-site; however, they are currently inactive. A site plan showing the Site features is included as Figure 2.

Based on NJDEP records, a release of gasoline occurred at the Site. In 1992, Immediate Environmental Concern (IEC) status was imposed by the NJDEP due to the human health risks associated with the Site-related contamination. Specifically, free-phase product and gasoline vapors were detected in a subsurface telephone utility vault located down-gradient of the Site.

In 1993, petroleum odors were detected in two downgradient subsurface utility vaults and in the basement of the United Telephone building (Figure 2). At that time, the contamination was traced to Eric's Main Street Mobil/BP, where the NJDEP documented the presence of 0.5 feet of free-phase product in each of the four (4) observation wells in the underground storage tank (UST) excavation area. The vacuum tightness testing in 1993 and 2000 showed that the integrity of the three (3) USTs and associated piping is intact, indicating that the contamination was likely the result of a surface release. It is suspected that this surface release occurred as a result of poor filling procedures and faulty spill buckets associated with the tanks. Gasoline is believed to have entered the UST excavation backfill through cracks in the concrete and asphalt, and through the four (4) observation wells, which are screened to the ground surface.

4.0 REMEDIAL INVESTIGATION SUMMARY

Initial RI activities at the Site were conducted by Berger between June 2001 and May 2002 to address the Site's IEC status and focused on the evaluation of potential receptors and source characterization. The investigative activities included a soil boring and sampling program, monitoring well installation and groundwater sampling, as well as a utility vault water investigation, indoor air investigation, soil gas sampling program and receptor evaluation. Supplemental RI activities focusing on the groundwater contamination were subsequently implemented between April and August 2004. The full horizontal and partial vertical delineation of Site-related groundwater contamination was later completed in 2005.

The results of the RI indicate the presence of contamination above the applicable remediation standards in the water in the UST excavation area, the soil in the vicinity of the UST excavation area and the groundwater beneath the Site. The findings also verified that the gasoline-contaminated water in the UST excavation backfill is the residual source of current contamination in soil and groundwater, as well as the previous source of contamination in utility vault water (Berger, 2005). The primary migration pathway of the contaminated water from the excavation is through the adjacent fuel supply piping trench, which would discharge to the surface at the terminus of the trench north of the pump island (Figure 2). It should be noted that, utility vault water sampling conducted during the RI indicated that the vault water quality has improved.

Two additional rounds of groundwater sampling were conducted at the Site in August and November 2006 (Berger, 2008). The analytical results show a decreasing trend of groundwater contamination at the Site. Groundwater contaminants previously detected above the *NJDEP Class II-A Ground Water Quality Standards* (GWQS) (NJDEP, 2005a) during the 2004 RI activities (i.e., benzene, ethylbenzene, total xylenes, MTBE, and TBA) were detected with lower concentrations at all of the groundwater monitoring wells sampled in these additional sampling events.

Based on the results of the RI activities, the primary media of concern that warrant remedial action are the gasoline-contaminated backfill in the UST excavation area and groundwater. Table 1 presents a summary of the analytes detected above the applicable remediation standards. In this DD, the gasoline-contaminated backfill in the UST excavation area is referred as "soil contamination". The following subsections summarize the investigation activities and resultant findings associated with soil and groundwater contamination.

4.1 Type and Distribution of Soil Contamination

A soil boring and sampling program was implemented in June 2004 in the northern portion of the Site in order to assess the quality of the soils in the UST Excavation Area. The analytical results indicated the presence of total xylenes in excess of the most stringent of the *NJDEP Soil Cleanup Criteria (SCC)* (NJDEP, 1999) at one (1) location, SB05, at two (2) discrete depth intervals. The elevated xylenes found in the SB05 samples are representative of soils impacted by the gasoline-contaminated water from the UST excavation which historically migrated along the fuel supply piping trench, overflowed from the end, and drained to the sub-base in this area. The distribution of contamination observed suggests that the fuel supply piping trench is a major migration pathway for contamination from the UST excavation. The observed xylenes contamination is vertically delineated by bedrock and horizontally delineated by the remaining soil samples.

4.2 Type and Distribution of Groundwater Contamination

Between June 2001 and August 2004, a groundwater investigation consisting of shallow and deep monitoring well installation, and groundwater sampling and analysis, was completed at the Site. Analytical results of the shallow groundwater samples indicate the presence of benzene, xylenes, ethylbenzene, MTBE, TBA and lead above the GWQS. The deep groundwater samples exhibited concentrations of benzene, xylenes, MTBE, TBA and PCE above (or equal to) the GWQS. Analytical results for the groundwater sample from observation well OBW #4 showed the presence of benzene and MTBE above GWQS.

The highest contaminant concentrations were generally detected in the MW-2S/2D well couplet, which is located just north of the pump island, where overflow of the water from the UST excavation backfill is interpreted to discharge from the end of the piping trench. Contaminated water, originating in the UST excavation backfill, likely migrated through the trench, spilled over into the sub-base, and infiltrated into the ground in the area north of the pump island, affecting soil and groundwater. Elevated concentrations of groundwater contaminants are interpreted to be attributable to the gasoline-contaminated water repeatedly seeping down through the soils in this area. It should be noted that PCE is a chlorinated solvent and is not a gasoline-related compound. Therefore, the PCE detected at MW-3D is not likely related to a source in this area of the Site.

Results of the additional rounds of groundwater sampling conducted in August and November 2006 indicate that groundwater quality at the Site has significantly improved as the groundwater results from June 2001 through November 2006 (as presented in Table 3), concentrations of

groundwater contaminants have generally decreased. Key findings from the groundwater results are summarized as follows:

- **MW-1d:** MTBE and TBA were previously detected above the GWQS. Only MTBE was still present above the GWQS in the November 2006 sampling event. TBA was not detected.
- **MW-1s:** Benzene, MTBE, and TBA were previously detected above the GWQS. The benzene concentration decreased to slightly above the GWQS in the November 2006 sampling event. The TBA concentration has been consistently decreased since 2001. MTBE was still detected at concentrations below the GWQS.
- **MW-2d:** Benzene, total xylenes, MTBE, and TBA were detected above the GWQS. All contaminants were below the GWQS in the 2006 sampling events and only MTBE was still detected.
- **MW-2s:** Benzene, total xylenes, ethylbenzene, MTBE, TBA, and lead were previously detected above the GWQS. Groundwater quality has been significantly improved. Only benzene, MTBE, and TBA were still detected above the GWQS in 2006. Toluene, total xylenes, and ethylbenzene were detected well below the GWQS during the same event.
- No contaminants were detected at any of the other wells (MW-2dd, MWs-3d/3s, MWs-4d/4s, MWs-5d/5s, MWs-6d/6s, and MWs-7d/7s) during the 2006 sampling events.

5.0 IDENTIFICATION AND SELECTION OF PREFERRED REMEDIAL APPROACHES

The purpose of the RASE was to identify and evaluate viable remedial approaches to address the documented soil and groundwater contamination in a manner that would result in the attainment of the Site remedial action objectives (RAOs). The RAOs selected for the Site are the NJDEP's unrestricted use Soil Cleanup Criteria (SCC) (i.e., most stringent of the Residential Direct Contact, Non-Residential Direct Contact and Impact to Groundwater SCC) and Class II-A GWQS for soil and groundwater, respectively. The SCC and GWQS are considered to be appropriate and relevant since their derivation is based on maintaining the protection of human health, the environment and public safety. The complete RASE report for soil and groundwater contamination was completed in February 2006 (Berger, 2006) and is available for review at the document repository identified in Section 1.0 of this document.

5.1 Remedial Action Selection

Based on the RI findings and the selected RAOs, various technologies were evaluated as viable remedial approaches to address the media of concern at the Site. The remedial approaches were evaluated against the remedial action criteria set forth in the *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) (NJDEP, 2005b), which include effectiveness and reliability of attaining the applicable remediation standards, reduction of toxicity, mobility and volume (TMV), risk minimization, implementability, compliance with applicable laws and regulations, potential impact on the local community, potential for natural resource injury, and estimated costs.

The RASE report evaluates the viable remedial approaches for two different areas (i.e., UST Excavation Area and Groundwater Contamination Area) for the two different media of concern (i.e., soil and groundwater). The detailed analysis of the approaches is presented in the RASE report and summarized in Table 2A and Table 2B of the report (Berger, 2006). A summary of the approaches identified for each medium of concern is presented in the following subsections.

5.1.1 UST Excavation Area

The UST Excavation Area refers to the UST system, which includes the USTs; the backfill and observation wells in the UST excavation; and the piping, backfill, fuel supply piping trench; and contaminated soil adjacent to the trench (Figure 2). The viable remedial approaches evaluated for this area are as follows:

- No Further Action
- Capping and Deed Notice (Institutional and Engineering Controls)
- UST System Removal

No Further Action involves leaving the Site in its current condition with no remedial action considered.

The Capping and Deed Notice remedial approach relies on engineering and institutional controls to address the contamination. A deed notice is an institutional control to limit potential receptor exposure to contaminants. An asphalt cap with a geotextile liner would serve as the engineering controls. Capping entails the removal and replacement of the damaged existing asphalt pavement as a containment and exposure control technique.

The UST System Removal approach involves the removal of the existing UST system, as described above, as well as the contaminated soils adjacent to the UST excavation and piping trench. Following UST system removal, the excavation would be backfilled with concrete-stabilized sand to prevent additional water collection in the excavation. The replacement of the asphalt on completion of the remedial action would aid in reducing infiltration of precipitation into the area. All contaminated media removed would be disposed/recycled off-site in accordance with applicable federal and state regulations pending waste characterization. This approach is believed to have the added benefit of removing the source of the groundwater contamination.

5.1.2 Groundwater Contamination Area

Groundwater Contamination refers to the Site-related groundwater contamination. The contamination is concentrated to the west of the UST Excavation Area and the north of the pump island. The boundary considered for remediation of this area is shown in Figure 2. The viable remedial approaches evaluated for this area are as follows:

- No Further Action;
- Classification Exception Area (Institutional and Engineering Controls);
- Oxygen Release Compound Injection (Enhanced Monitored Natural Attenuation);
- Dual-Phase Extraction; and
- *In-Situ* Chemical Oxidation

The No Further Action approach involves leaving the Site in its current condition with no remedial action considered.

The Classification Exception Area (Institutional and Engineering Controls) remedial approach (hereinafter referred to as the “Institutional Controls/CEA Remedial Approach”) uses institutional controls to limit exposure and long-term monitoring to track contaminant migration and potential receptors exposure. The institutional control for the Site would consist of development of a Classification Exception Area (CEA). Proposed monitoring activities for the CEA remedial approach originally proposed in the RASE include semi-annual sampling and analysis of groundwater for 30 years. However, as discussed earlier, the 2006 groundwater monitoring results demonstrated that groundwater quality has significantly improved as a result of ongoing Natural Attenuation. Therefore, the proposed period of groundwater monitoring has been revised from the RASE to be a total of 20 years, which consists of quarterly monitoring for the first two (2) years; semiannual monitoring for the next three (3) years; and, annual monitoring for the remaining 15 years. The future reduction of groundwater contamination in this approach also relies on Natural Attenuation or natural processes such as degradation, volatilization, adsorption/desorption, solubility/dilution, chemical transformation, advection, and dispersion reduce groundwater contamination to acceptable levels.

The Oxygen Release Compound Injection remedial technology entails the injection of Oxygen Release Compound Advanced (ORC Advanced™), which releases oxygen for approximately 12 months to enable aerobic microbes to significantly accelerate rates of biodegradation. Semi-annual sampling and analysis of groundwater for 6 years is proposed to track the effectiveness of the remedial action. An institutional control (i.e., CEA) would also be required to protect human health and the environment until contaminant concentrations are reduced to applicable remediation standards.

The application of Dual Phase Extraction (DPE) entails extraction and treatment of contaminated groundwater and soil vapor. The extracted waste streams will be treated ex-situ by carbon adsorption, followed by discharge under the appropriate permits. It is expected that the DPE system will be operated for 5 years in order to achieve the applicable remediation standards. In order to track the effectiveness of the remedial action, semi-annual sampling and analysis of groundwater for 10 years would be required. A CEA would also be required to protect human health and the environment until contaminant concentrations are reduced to applicable remediation standards.

The *In-Situ* Chemical Oxidation remedial approach entails the use of a chemical oxidizing agent such as RegenOx™ to maximize *in-situ* oxidation of the contaminants. The chemical consists of two parts (i.e., an oxidizer and activator) that are combined and injected into the subsurface. A

CEA would also have to be maintained to protect human health and the environment until contaminant concentrations are below applicable remediation standards. Proposed monitoring activities for this remedial approach would include semi-annual sampling and analysis of groundwater for 6 years.

5.2 Preferred Remedial Approaches

Based on the evaluation of the viable remedial approaches against the remedial action criteria and the *NJDEP RI/RASE SOW*, UST System Removal is the preferred remedial approach for the UST Excavation Area and the Institutional Controls/CEA Remedial Approach is the preferred remedial approach for the Groundwater Contamination Area. Detailed discussion of the preferred remedial approaches and their evaluation against the remedial action criteria are presented in the following section.

6.0 SUMMARY OF SELECTED REMEDIAL APPROACHES

Based on the evaluation of the viable remedial approaches against the remedial action criteria, the preferred remedial approaches for the Site are UST System Removal for the UST Excavation Area and Institutional Controls/CEA Remedial Approach for the Groundwater Contamination Area. Table 3 and the following subsections describe the preferred remedial approaches relative to the remedial action criteria previously identified.

6.1 UST Excavation Area

As previously discussed, this remedial approach involves the removal of the existing UST system and contaminated soils adjacent to the UST excavation and piping trench, followed by post-excavation sampling in accordance with the *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E-6.3). This remedial approach allows for permanent removal of contamination that would result in removal of the source of groundwater contamination and thus significant reduction of risk to human health. It will also result in immediate compliance with the applicable remediation standards (NJDEP SCC) as well as removal of the source of contamination in the Groundwater Remediation Area discussed in Section 6.2. The proposed area of excavation is shown in Figure 3.

Following UST removal, the excavation would be backfilled with concrete-stabilized sand to prevent additional water collection in the excavation. The replacement of the asphalt on completion of the remedial action would aid in reducing infiltration of precipitation into the area. All contaminated media removed would be disposed/recycled off-site in accordance with applicable federal and state regulations pending waste characterization. No monitoring plan is proposed for soil since it is expected that the soil contamination would be completely removed after the removal. The estimated cost of this preferred remedial approach, therefore, is approximately \$130,000 as presented below.

Effectiveness and Reliability of Attaining the Applicable Remediation Standards

This approach will effectively and reliably achieve immediate compliance with the applicable remediation standards through the physical removal of the contaminated water and backfill from the UST Excavation Area.

Reduction of Toxicity, Mobility, or Volume (TMV)

The UST System Removal approach offers a good reduction in contaminant TMV. Physical removal of the contaminated media will reduce the threat of mobility. In addition, the materials

removed during this approach would likely be recycled off-site, which would reduce the toxicity and volume of the contaminants.

Risk Minimization

The UST System Removal approach offers significant risk reduction, primarily because it involves removal of all contaminated water and backfill from the UST Excavation Area. However, this approach may involve short-term risk to workers associated with the excavation activities. Health and safety practices such as the use of personal protective equipment will aid in reducing potential exposure.

Implementability

The UST System Removal approach is readily implementable. It is a well-established, readily-available remedy that produces immediate compliance with the applicable remediation standards, and thus, is considered timely.

Compliance with Applicable Laws and Regulations

The UST System Removal approach will be consistent with all applicable laws and regulations. The *Technical Requirements for Site Remediation* govern the majority of the work as well as the cleanup criteria or standards of the respective media (i.e., applicable remediation standards). In addition, the *Resource Conservation and Recovery Act (RCRA) (40 CFR Part 270)* regulates contaminant disposal.

Potential Impact on the Local Community

It is expected that the community will consider the UST System Removal approach a protective remedy. There will likely be some short-term disturbance due to the noise and exhaust fumes produced by the heavy equipment associated with the approach.

Potential for Natural Resource Injury

The UST System Removal approach will result in immediate elimination of the residual source of contamination, which will significantly reduce the potential for natural resource injury.

Estimated Costs

The UST System Removal remedial approach is expected to cost approximately \$130,000, as presented below.

Total Capital Cost - \$130,000

Total O&M Cost – N/A

Total Net Present Value - \$130,000

6.2 Groundwater Contamination Area

As evaluated in the RASE Report (Berger 2006) and previously referenced in this document, the Institutional Controls/CEA Remedial Approach uses institutional controls to limit exposure and long-term monitoring to track contaminant migration and potential receptors exposure. The institutional control for the Site would consist of development of a CEA. There is no engineering control proposed in this remedial approach. Inherent in the Institutional Controls/CEA Remedial Approach is Natural Attenuation of the contamination. Natural Attenuation occurs through natural processes which can reduce groundwater contamination to acceptable levels over time through degradation, volatilization, adsorption/desorption, solubility/dilution, chemical transformation, advection, and dispersion. Review of the results of the groundwater monitoring activities conducted in 2001, 2004, and 2006 indicate that natural processes have effectively attenuated contamination in groundwater at the Site. Contaminant concentrations previously detected above the GWQS (at MW-1S/1D, MW-2S/2D, and MW-3D) have consistently decreased at all of the monitoring wells. No exceedances above the GWQS are detected at MW-2D and MW-3D in 2006.

The CEA at the Site will be implemented in accordance with the NJDEP Final Guidance on Designation of Classification Exception Areas (NJDEP, 1998) and the *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E-8.4). As such, a biennial certification (every two years) is required to be submitted for the duration of the CEA. The biennial certification report is required to ensure the remediation of the Site remains protective to human health and the environment. The reporting obligation ends when contaminants attenuate to concentrations that are below the GWQS.

Monitoring activities originally proposed in the 2006 RASE report as parts of this approach include semi-annual sampling and analysis of groundwater for 30 years at source area wells (couplets of MW-1 to MW-3), plume fringe wells (to be installed), and sentinel wells (couplets of MW-4 to MW-7). It should be noted that four (4) additional couplets of monitoring wells

(MW-8 to MW-11), which will serve as plume fringe wells, would be installed between the source area wells and the sentinel wells (see Figure 4) (Berger, 2006).

However, based on the review of the additional groundwater results completed later in 2006 (Berger, 2008), it is now estimated that Natural Attenuation should be able to degrade Site contaminants to below the GWQS within 20 years. As such, the CEA is estimated to be terminated within 20 years and require 10 biennial certifications and four five-year reviews. Thus, the proposed groundwater monitoring program associated with this preferred remedial approach has been revised (as compared to the RASE) to consist of quarterly groundwater monitoring for the first two (2) years; semi-annual groundwater monitoring for the next three years; and annual groundwater monitoring for the remaining 15 years. Groundwater samples would still be collected from the originally proposed groundwater monitoring wells (i.e., couplets of MW-1 to MW-3, couplets of MW-4 to MW-7, and couplets of MW-8 to MW-11). A 5-yr remedial approach reevaluation of this remedial approach will be required. Additionally, the duration of groundwater monitoring program and the CEA may be reevaluated during the biennial certification submission and the 5-yr remedial approach reevaluation. The estimated cost of this preferred remedial approach, therefore, is approximately \$600,000. The cost is further presented later in this section.

Primary Assumptions for Selected Groundwater Approach

Duration	Sampling Frequency	No. of Wells per Sampling Event	Institutional Control Reviews
20 years	Quarterly – 2 years Semi-Annually – 3 years Annually – 15 years	18	10 – Biennial Certifications 4 – Five Year Review

Effectiveness and Reliability of Attaining the Applicable Remediation Standards

The Institutional Controls/CEA Remedial Approach relies only on natural attenuation processes to degrade the contaminants. However, the groundwater monitoring results indicate that the natural processes have been reduced the contaminant concentration.

Reduction of Toxicity, Mobility, or Volume (TMV)

The Institutional Controls/CEA Remedial Approach offers little reduction in TMV, relying solely on the natural attenuation process to reduce toxicity.

Risk Minimization

The Institutional Controls/CEA Remedial Approach relies only on natural attenuation process and use restriction of the groundwater to minimize the risk.

Implementability

This remedial alternative is considered to be readily implementable. Generally, natural attenuation occupied by the Institutional Controls/CEA Remedial Approach is not expected to be timely to achieve the applicable remediation standards. However, based on the SRI and previous RI results, it is expected that the GWQS would be achieved relatively quickly (approximately within five years).

Compliance with Applicable Laws and Regulations

The Institutional Controls/CEA Remedial Approach is consistent with all applicable laws and regulations, including the Federal Safe Drinking Water Act (40 CFR parts 141, 142, and 143) and State Safe Drinking Water Act (N.J.A.C. 7:10-1), which regulate levels of contaminants in drinking water.

Potential Impact on the Local Community

The community will undergo very little impact due to implementation of the Institutional Controls/CEA Remedial Approach. However, it may be perceived by the community as unprotective.

Potential for Natural Resource Injury

The Institutional Controls/CEA Remedial Approach offers the minimum results in reduction in the potential for natural resource injury.

Estimated Costs

The Institutional Controls/CEA remedial approach is expected to cost approximately \$600,000, as presented below.

Total Capital Cost - \$60,000

Total O&M Cost - \$540,000

Total Net Present Value - \$600,000

6.3 Remedial Costs

The following provides a summary of the total estimated remedial costs for each medium of concern:

- Cost for UST System Removal in the UST Excavation Area - \$130,000
- Cost for Institutional Controls/CEA Remedial Approach in the Groundwater Contamination Area - \$600,000

The total estimated remedial cost for the Site is \$730,000.

7.0 REFERENCES

- NJDEP (New Jersey Department of Environmental Protection), 1998. *Final Guidance on Designation of Classification Exception Areas*, November 1998.
- NJDEP (New Jersey Department of Environmental Protection), 1999. *Soil Cleanup Criteria*, N.J.A.C. 7:26D, May 1999.
- NJDEP (New Jersey Department of Environmental Protection), 2005a. *Groundwater Quality Standards* (N.J.A.C. 7:9C), November 7, 2005.
- NJDEP (New Jersey Department of Environmental Protection), 2005b. *Technical Requirements for Site Remediation*, N.J.A.C. 7:26E, August 2005.
- Berger (The Louis Berger Group, Inc.), 2005. *Final Remedial Investigation Report, Eric's Main Street, Flemington, New Jersey*, Submitted to NJDEP, August 2005.
- Berger (The Louis Berger Group, Inc.), 2006. *Final Remedial Action Selection Evaluation Report, Eric's Main Street, Flemington, New Jersey*, Submitted to NJDEP, February 2006
- Berger (The Louis Berger Group, Inc.), 2008. *Summary Report of Supplemental Remedial Investigation, Eric's Main Street, Flemington, New Jersey*, 2008.

Table 1
Eric's Main Street Mobil/BP
Flemington, New Jersey
Summary of Contaminated Media

Media of Concern	Contaminants of Concern ¹	Concentration Range of Exceedances ¹	Applicable Remediation Standard	Frequency of Exceedences	Exceedence Location
UST Excavation Area ^{2, 3}	Benzene	16 ug/L	1 ug/L	1 of 1	Observation Well OBW#4
	MTBE	850 ug/L	70 ug/L	1 of 1	
Groundwater Contamination Area ^{2, 3}	Benzene	3.5 to 91.6 ug/L	1 ug/L	2 of 15	Monitoring Wells MW-1S, MW-2S, MW-1D, MW-2D, and MW-3D
	MTBE	190 to 442 ug/L	70 ug/L	2 of 15	
	TBA	192 to 301 ug/L	100 ug/L	2 of 15	
Soil ⁴	Xylene	110 to 250 mg/kg	67 mg/kg	2 of 20	SB05A and SB05B
Utility Vault Water	Benzene	2J ug/L	N/A	1 of 3	Utility Vault 502

Notes:

¹Only contaminants which exceed applicable criteria are listed. The range of exceedances presented are based on the most current results (i.e., 2004 results for the UST Excavation Area, Soil, and Utility Vault Water; and 2006 results for the Groundwater Contamination Area.

²Groundwater and UST excavation samples were compared to *NJDEP Class II-A Groundwater Quality Standards* (GWQS).

³UST Excavation Area and Groundwater Contamination Area are the only two media of concern addressed for remediation in this RASE.

⁴Soil samples were compared to the most stringent of the *NJDEP Soil Cleanup Criteria* (SCC).

J = Estimated analytical value

Table 2
New Jersey Department of Environmental Protection
Eric's Main Street Mobil / BP
Flemington, New Jersey
Groundwater Analytical Results

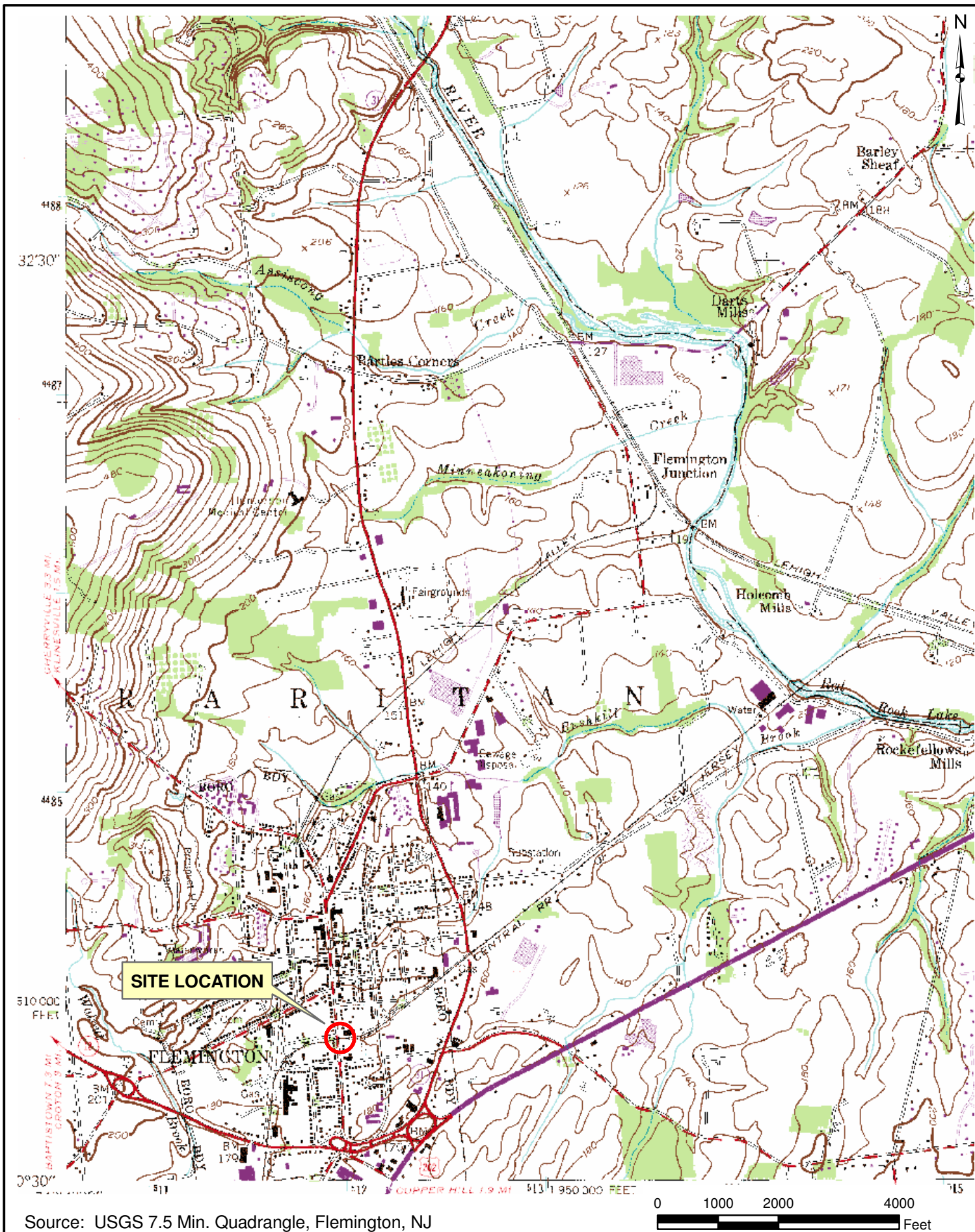
Sample ID	Date Collected	Benzene	Toluene	Total Xylenes	Ethylbenzene	MTBE	PCE	TBA	Lead
GWQS	-	1	1000	1000	700	70	1	100	10
MW-1dA*	7/25/2001*	< 50	< 50	< 50	< 50	510	<50	150	< 1.2
MW-1dB*	7/25/2001*	< 40	< 40	< 40	< 40	560	<40	94	< 1.2
MW-1d	11/13/2001*	<1	<1	<1	<1	580	<1	<50	6.6
	5/26/2004	<1	<1	<1	<1	542	NA	62.6	NA
	8/3/2004	<1	<1	<1	<1	674	NA	149	NA
	8/8/2006	<1	<1	<1	<1	471	NA	<25	NA
	11/30/2006	<1	<1	<1	<1	442	NA	<25	NA
MW-1s	7/24/2001	25	< 20	23	4 J	220	<20	3000	10.3
	11/13/2001	11	0.7 J	19	2	320	<1	1100	<2.0
	5/26/2004	18.8	1.5	21	14.3	46.6	NA	756	NA
	8/3/2004	25.8	2.5	50.8	21.3	53.8	NA	672	NA
	8/8/2006	10.2	1.3	16.9	5.2	26.1	NA	324	NA
	11/30/2006	3.5	<1	7	<1	19.8	NA	301	NA
MW-2dA	7/25/2001	61 J	72 J	1100	130	820	<100	300	< 1.2
MW-2dB	7/25/2001	56 J	71 J	1100	140	860	<80	260	< 1.2
MW-2d	11/13/2001	39	39	300	44	930	<1	100	2.6
	5/26/2004	64.1	48.3	409	101	548	NA	247	NA
	8/3/2004	38.1	23.2	223	31.2	831	NA	93.9	NA
	8/9/2006	<1	<1	<1	<1	0.76	NA	<25	NA
	11/30/2006	<1	<1	<1	<1	2.5	NA	<25	NA
DUP01 (MW-2d)	8/10/2006	<1	<1	<1	<1	0.74	NA	<1	NA
MW-2dd	5/27/2004	<1	<1	<1	<1	<1	NA	<25	NA
	8/3/2004	<1	<1	<1	<1	1	NA	<25	NA
	8/10/2006	<1	<1	<1	<1	0.83	NA	<25	NA
	11/30/2006	<1	<1	<1	<1	<1	NA	<25	NA
MW-2s	7/24/2001	270	280	1200	74 J	1700	<200	880	13
	11/14/2001	770	330	2100	510	1600	<1	390	6.6
	5/27/2004	412	314	3750	800	1020	NA	361	NA
	8/3/2004	686	296	6990	1450	856	NA	561	NA
	8/9/2006	204	72	3240	1310	478	NA	217	NA
	11/30/2006	91.6	22	551	67.6	190	NA	192	NA
MW-3d	7/24/2004	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	11/13/2001	<1	<1	<1	<1	2	1	<50	NA
	5/26/2004	<1	<1	<1	<1	1.4	NA	<25	NA
	8/7/2006	<1	<1	<1	<1	<1	NA	<25	NA
	11/30/2006	<1	<1	<1	<1	<1	NA	<25	NA
MW-3s	7/24/2001	< 10	< 10	< 10	< 10	12	<10	< 50	< 1.2
	11/13/2001	<1	<1	<1	<1	5	<1	<50	7.6
	5/26/2004	<1	<1	<1	<1	7.1	NA	<25	NA
	8/2/2004	<1	<1	<1	<1	8	NA	<25	NA
	8/7/2006	<1	<1	<1	<1	0.64	NA	<25	NA
	11/30/2006	<1	<1	<1	<1	<1	NA	<25	NA
MW-4d	5/25/2004	<1	<1	<1	<1	<1	NA	<25	NA
	8/2/2004	<1	<1	<1	<1	<1	NA	<25	NA
	8/10/2006	<1	<1	<1	<1	<1	NA	<25	NA
	11/30/2006	<1	<1	<1	<1	<1	NA	<25	NA
MW-4s	5/25/2004	<1	<1	<1	<1	<1	NA	<25	NA
	8/2/2004	<1	<1	<1	<1	<1	NA	<25	NA
	8/9/2006	<1	<1	<1	<1	<1	NA	<25	NA
	11/29/2006	<1	<1	<1	<1	<1	NA	<25	NA
MW-5d	5/25/2004	<1	<1	<1	<1	8.9	NA	<25	NA
	8/4/2004	<1	<1	<1	<1	2.6	NA	<25	NA
	8/8/2006	<1	<1	<1	<1	<1	NA	<25	NA
	11/29/2006	<1	<1	<1	<1	<1	NA	<25	NA
MW-5s	5/25/2004	<1	<1	<1	<1	<1	NA	<25	NA
	8/2/2004	<1	<1	<1	<1	<1	NA	<25	NA
	8/8/2006	<1	<1	<1	<1	<1	NA	<25	NA
	11/28/2006	<1	<1	<1	<1	<1	NA	<25	NA
MW-6s	5/25/2004	<1	<1	<1	<1	<1	NA	<25	NA
	8/2/2004	<1	<1	<1	<1	0.68 J	NA	<25	NA
	8/10/2006	<1	<1	<1	<1	<1	NA	<25	NA
	11/29/2006	<1	<1	<1	<1	<1	NA	<25	NA
MW-6d	5/25/2004	NA	NA	NA	NA	NA	NA	NA	NA
	8/4/2004	<1	<1	<1	<1	<1	NA	<25	NA
	8/9/2006	<1	<1	<1	<1	<1	NA	<25	NA
	11/29/2006	<1	<1	<1	<1	<1	NA	<25	NA
MW-7d	5/25/2004	<1	0.78 J	0.89 J	<1	43.5	NA	<25	NA
	8/4/2004	<1	0.34 J	<1	<1	24.4	NA	<25	NA
	8/9/2006	<1	<1	<1	<1	3.9	NA	<25	NA
	11/29/2006	<1	<1	<1	<1	1.6	NA	<25	NA
DUP01(MW-7d)	11/29/2007	<1	<1	<1	<1	1.7	NA	<1	NA
MW-7s	5/25/2004	<1	<1	<1	<1	21	NA	<25	NA
	8/3/2004	<1	0.27 J	<1	<1	8.4	NA	<25	NA
	8/9/2006	<1	<1	<1	<1	<1	NA	<25	NA
	11/29/2006	<1	<1	<1	<1	<1	NA	<25	NA
OB4	11/14/2001	16	17	680	39	850	<1	75	<2
FB02	8/8/2006	<1	<1	<1	<1	<1	NA	<1	NA
TB	8/8/2006	<1	<1	<1	<1	<1	NA	<1	NA
TB	8/10/2006	<1	<1	<1	<1	<1	NA	<1	NA
FB03	8/9/2006	<1	<1	<1	<1	<1	NA	<1	NA
FB04	8/10/2006	<1	<1	<1	<1	<1	NA	<1	NA
FB01	11/28/2007	<1	<1	<1	<1	<1	NA	<1	NA
FB02	11/29/2007	<1	<1	<1	<1	<1	NA	<1	NA
FB03	11/30/2007	<1	<1	<1	<1	<1	NA	<1	NA
TB	11/30/2007	<1	<1	<1	<1	<1	NA	<1	NA

Notes:
Concentrations reported in ug/l
NA = Parameters not analyzed
J = Estimated Concentration
< = Compound is not present above the shown method detection limit
MTBE = Methyl Tert Butyl Ether
TBA = Tert Butyl Alcohol
PCE = Tetrachloroethene
Dry = Not sampled, well was dry

GWQS = NJDEP Class II-A Groundwater Quality Standard
Bold results indicate positive detections
Bold and shaded results indicate an exceedance of the GWQS
* Two groundwater samples were collected from deep monitoring wells MW-1d and MW-2d on 7/25/02. Samples Mw-1d-A and MW-2d-A were collected from the top of the screen interval; samples MW-1d-B and MW-2d-B from the bottom. On 11.13.01, one sample was collected from these wells from the middle of the screen.

Table 3
Eric’s Main Street Mobil/BP
Flemington, NJ
Summary of Preferred Remedial Alternatives

Remedial Approach	Protection of Human Health and the Environment			Implementability	Consistency With Applicable Laws and Regulations	Potential Impacts on the Local Community	Potential for Natural Resource Injury	Estimated Costs (Net Present Value)
	Effectiveness and Reliability in Attaining Applicable Remediation Standard	Reduction of Toxicity, Mobility or Volume	Risk Minimization					
UST System Removal	The UST System Removal approach most effectively and reliably meets the applicable remediation standard, offering immediate compliance by physically removing contaminated media. This includes both media in, and adjacent to, the excavation and the fuel supply piping trench.	The UST System Removal approach offers a fair reduction in toxicity, mobility, or volume. Physical removal of the contaminated media will reduce threat of mobility. However, there is no reduction in either contaminant toxicity or volume of contaminated media.	The UST System Removal approach offers a significant reduction in risk. By physically removing the contaminated media, risk is minimized. There is some short-term risk to workers involved in the excavation activities.	The UST System Removal approach is readily implementable. It is a widely available treatment with demonstrated effectiveness that produces immediate compliance with applicable remediation standards and is thus considered timely (i.e., achieves applicable remediation standards in less than five years).	The UST System Removal approach is consistent with the <i>New Jersey Technical Requirements for Remediation</i> and the <i>Resource Conservation and Recovery Act</i> . Specialized provisions such as the <i>Pinelands Protection Act</i> or the <i>National Parks and Recreation Act</i> do not apply.	The community will likely perceive the UST system Removal approach as protective. There will be some short-term disturbance due to the close proximity of neighbors and the need for heavy equipment causing added noise and exhaust.	The UST System Removal is expected to immediately eliminate the residual source of contamination off-site resulting in the least natural resource injury.	Capital Costs ≅ \$130,000 O&M Costs ≅ \$0 TOTAL = \$130,000
Institutional Controls/CEA Remedial Approach	The Institutional Controls/CEA Remedial Approach relies only on natural attenuation processes to degrade the contaminants. However, the groundwater monitoring results indicate that the natural processes have been reduced the contaminant concentration.	The Institutional Controls/CEA Remedial Approach offers little reduction in TMV, relying solely on the natural attenuation process to reduce toxicity.	The Institutional Controls/CEA Remedial Approach relies only on natural attenuation process and use restriction of the groundwater to minimize the risk.	This remedial alternative is considered to be readily implementable. Generally, natural attenuation occupied by the Institutional Controls/CEA Remedial Approach is not expected to be timely to achieve the applicable remediation standards. However, based on the SRI and previous RI results, it is expected that the GWQS would be achieved relatively quickly (approximately within five years).	The Institutional Controls/CEA Remedial Approach is consistent with all applicable laws and regulations, including the Federal Safe Drinking Water Act (40 CFR parts 141, 142, and 143) and State Safe Drinking Water Act (N.J.A.C. 7:10-1), which regulate levels of contaminants in drinking water.	The community will undergo very little impact due to implementation of the Institutional Controls/CEA Remedial Approach. However, it may be perceived by the community as unprotective.	The Institutional Controls/CEA Remedial Approach offers the minimum results in reduction in the potential for natural resource injury.	Capital Costs ≅ \$60,000 O&M Costs ≅ \$540,000 TOTAL = \$600,000



Source: USGS 7.5 Min. Quadrangle, Flemington, NJ



NJ Department of Environmental Protection

Eric's Main Street Mobil/BP - Flemington, Hunterdon County, New Jersey

SITE LOCATION MAP
NJDEP Contract No. A-85149

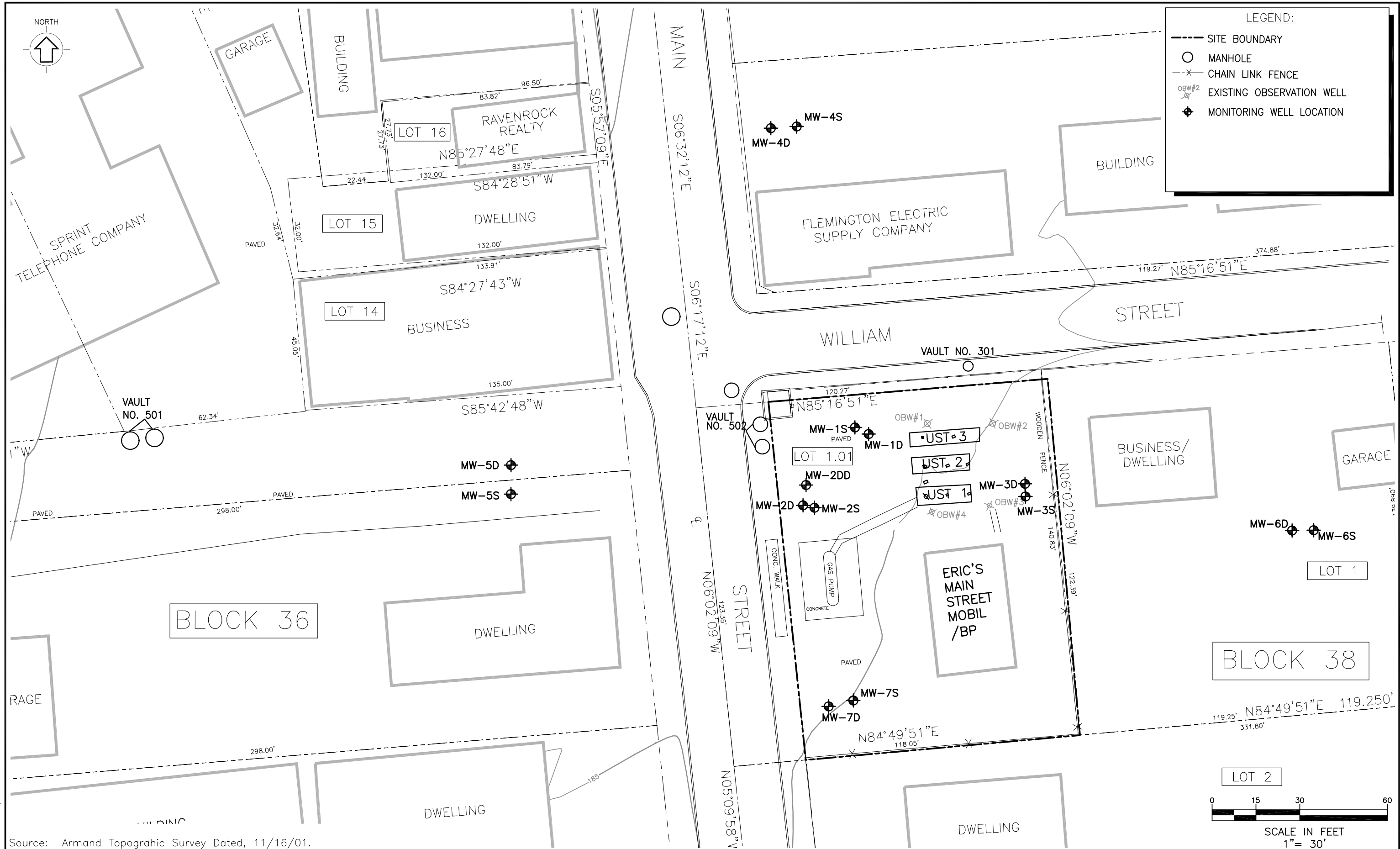
The Louis Berger Group, Inc.



412 Mt Kemble Ave
Morristown, NJ

FIGURE 1

EMSRASE – SP/01APR02/CONTAM.SCR



Source: Armand Topographic Survey Dated, 11/16/01.



N.J. Department
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Protection

Eric's Main Street Mobil/BP – Flemington
Hunterdon County, New Jersey

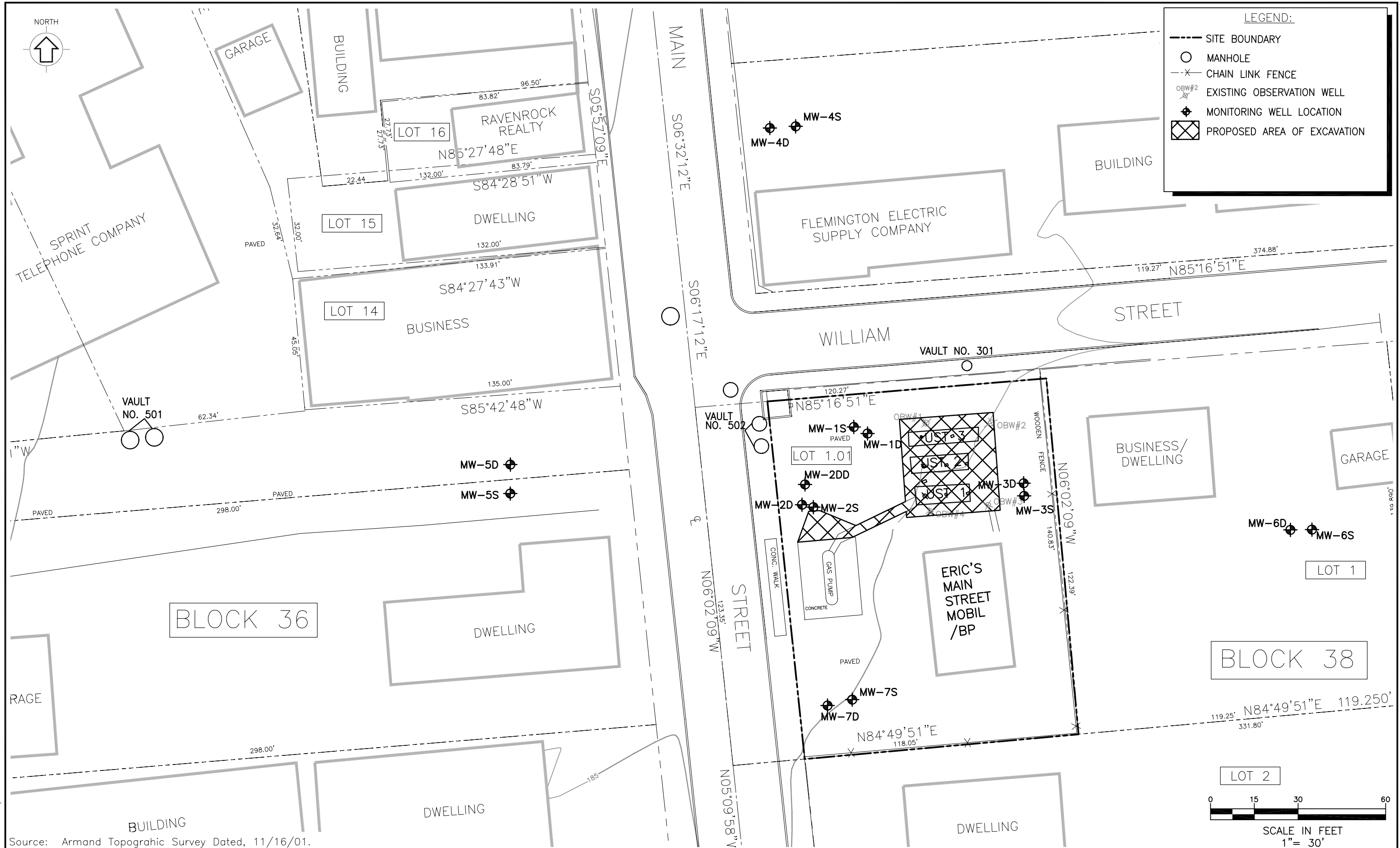
SITE PLAN

NJDEP CONTRACT No. A-85149

The Louis Berger Group, Inc.
412 Mount Kemble Ave.,
Morristown, NJ

FIGURE 2

EMSRAE – SP/01APR02/CONTAM.SCR



N.J. Department
of Environmental
Protection

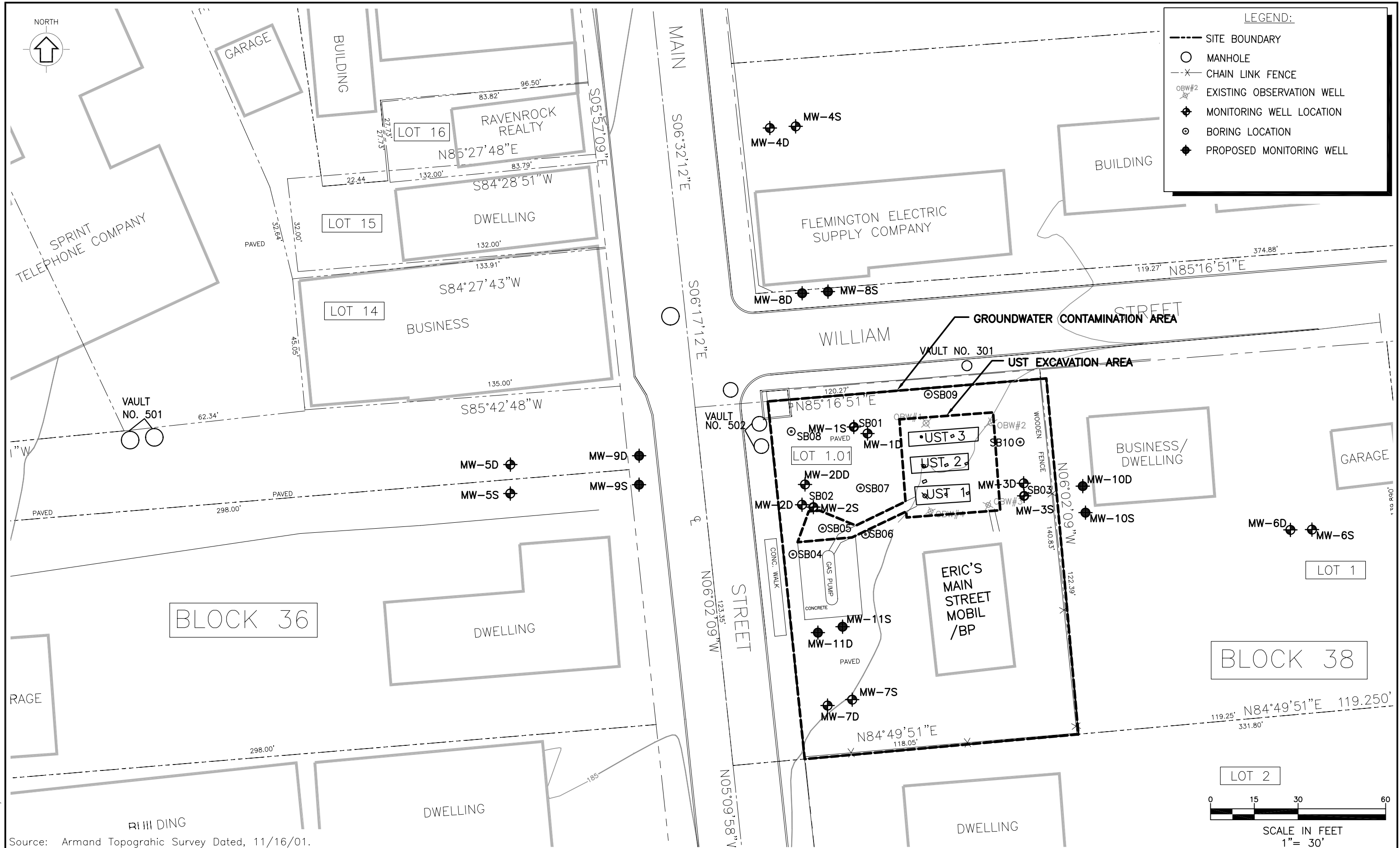
PREFERRED REMEDIAL APPROACH FOR UST EXCAVATION AREA – PROPOSED AREA OF EXCAVATION

Eric's Main Street Mobil/BP – Flemington
Hunterdon County, New Jersey
NJDEP CONTRACT No. A-85149

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Morristown, NJ

FIGURE 3

EMSRASE – SP/01APR02/CONTAM.SCR



Source: Armand Topographic Survey Dated, 11/16/01.



N.J. Department
of Environmental
Protection

PREFERRED REMEDIAL APPROACH FOR GROUNDWATER CONTAMINATION AREA – PROPOSED GROUNDWATER MONITORING WELLS

Eric's Main Street Mobil/BP – Flemington
Hunterdon County, New Jersey
NJDEP CONTRACT No. A-85149

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FIGURE 4